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| EXAMINER | |
|---|---|
| LAMB, CHRISTOPHER RAY | |
| **ART UNIT** | **PAPER NUMBER** |
| 2627 | |

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/530,942 | HORIMAI, HIDEYOSHI | |
| | Examiner | Art Unit | |
| | Christopher R. Lamb | 2627 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *25 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Drawings*

1. The drawings were received on the 25th of September, 2006. These drawings are acceptable.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 6-11, and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Horimai et al. (US 5,916,798).

This rejection has been repeated from the previous Office Action (except for the addition of claim 14, which was not previously considered).

Regarding claim 1:

Horimai discloses an information recording method wherein information is recorded to a recording medium by utilizing an interference pattern formed by the interference between an information light (column 10, lines 3-20), which is spatially modulated by digital pattern information displayed in a spatial light modulator which has a large number of pixels (column 12, lines 5-16), and a reference light for recording (column 10, lines 3-20), wherein:

digital information that is recorded is digital pattern information (column 21, lines 21-64) and expressed by the matching or mismatching of the attributes of adjacent

pixels in said spatial light modulator (column 21, lines 21-64: a "0" or "1" is represented by mismatching pixels, and error data is represented by matching pixels: the error data is part of the "digital pattern information" because it is used as a tracking pixel pattern).

Regarding claim 2:

In Horimai, digital information is expressed by a plurality of pixels aligned in one-dimension of said spatial light modulator (Fig. 23A, 23B: the data is aligned in rows).

Regarding claim 3:

In Horimai, said spatial light modulator has a large number of pixels arranged in a grid, and plural digital pattern information expressed by a plurality of the pixels aligned in said one-dimension are combined to be displayed as two-dimensional digital pattern information (Fig. 23A, 23B).

Regarding claim 6:

Horimai discloses an information reproducing method in which the information is reproduced from a recording medium (column 10, lines 3-20) wherein information is recorded by utilizing an interference pattern formed by the interference between an information light (column 10, lines 3-20), which is spatially modulated by digital pattern information displayed in a spatial light modulator which has a large number of pixels (column 12, lines 5-16), and a reference light for recording (column 10, lines 3-20), wherein:

a reference light for reproduction is radiated to the recording medium to generate a reproduction light by which said digital pattern is carried (column 22, line 59 to column 23, line 10); and the matching and mismatching of the attributes of adjacent pixels in the

digital pattern information of the reproduction light are detected (column 21, line 21 to column 22, line 11).

Regarding claim 7:

In Horimai's method, a detector for detecting reproduction light has a plurality of pixels, and the pixels of detector are disposed on a border of adjacent pixels in said digital pattern information (column 21, line 21 to column 22, line 11).

Regarding claim 8:

In Horimai, digital pattern information of said reproduction light is expressed by a plurality of pixels aligned in one dimension of said spatial light modulator (Fig. 23A, 23B).

Regarding claims 9-11 and 14:

All elements positively recited in these claims have already been identified with respect to claims 1-3 and 6-8.

Regarding claim 15:

Horimai discloses an information recording method wherein information is recorded in a recording medium by utilizing an interference pattern formed by interference between information light (column 10, lines 3-20), which is spatially modulated by digital pattern information displayed in a spatial light modulator which has a large number of pixels arranged in a grid (column 12, lines 5-16), and reference light for recording (column 10, lines 3-20), wherein:

digital information that is recorded is digital pattern information and expressed by the allocation of pixel groups comprising a succession of a plurality of pixels whose

attributes are matched to each other within a predetermined area of the spatial light modulator (column 21, line 21 to column 22, line 11: the tracking pixel pattern is in a predetermined area and contains pixels whose attributes are matched to each other).

Regarding claim 16:

In the method of Horimai, a plurality of said pixel groups are disposed in a predetermined area (column 21, line 21 to column 22, line 11).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4, 5, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horimai in view of Suganuma (JP Publication 07-152095; see machine translation).

This rejection has been repeated from the previous office action (except for the addition of claim 13, which was not previous considered):

Regarding claims 4/1, 4/2, 4/3:

Horimai discloses an information recording method as discussed above.

Horimai does not disclose "wherein said digital pattern information is such that a pixel whose attribute does not match that of one adjacent pixel is displayed so as to invariably have a pixel whose attribute matches on the other end."

Suganuma discloses recording digital pattern information where a pixel whose attribute does not match that of one adjacent pixel is displayed so as to invariably have a pixel whose attribute matches on the other end (abstract).

Suganuma discloses that this helps eliminate diffraction during recording (abstract: Suganuma is not recording on the same kind of medium but the principle is still the same).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Horimai as taught by Suganuma to include wherein said digital pattern information is such that a pixel whose attribute does not match that of one adjacent pixel is displayed so as to invariably have a pixel whose attribute matches on the other end.

The motivation would have been to reduce error during recording, as taught by Suganuma.

Regarding claims 5/1, 5/2, 5/3, 5/4:

In Horimai as taught by Suganuma digital pattern information is such that a pixel whose attribute does not match that of one adjacent pixel is displayed so as to invariably have a certain number or more of consecutive pixels whose attributes match on the other sides (this is very similar to claim 4, and included in the teaching of Suganuma).

Regarding claims 12/9, 12/10, 12/11, 13/9, 13/10, and 13/11:

These claims are similar to claim 4 or 5, and are rejected for the same reasons.

***Response to Arguments***

6. Applicant's arguments filed 25th of September, 2006 have been fully considered but they are not persuasive.

Regarding the rejection of claims 1-3, 6-11, and 15-16 (and now 14) as anticipated by Horimai et al:

Applicant argues (page 8) that the prior art, Horimai, does not teach that digital information is expressed by matching or mismatching of attributes of adjacent pixels and instead "merely teaches an error recognition for the position of the reproducing light."

In the prior art, mismatched pixels represent one-bit data ("0" or "1"). Whether the first pixel is on and the second off or vice-versa determines whether it represents a "0" or "1" specifically. Matched pixels represent error data, and are used as part of a tracking scheme. This is different than the Applicant's invention, in which both matched and mismatched pixels represent one-bit data. In the Applicant's disclosure, if two adjacent pixels are mismatched, it represents a "0," and if they are matched, it represents a "1."

Nonetheless the prior art still meets the claim language. Claim 1 recites "digital information that is recorded is digital pattern information and expressed by the matching or mismatching of the attributes of adjacent pixels in said spatial light modulator."

Horimai meets this for two reasons. First, digital data is represented by the mismatching of the attributes of adjacent pixels as noted above. Since the claim requires data be expressed by the "matching or mismatching," this meets the claim.

Second, in the prior art, the tracking pixels (the matched pixels) still express digital pattern information, even if they don't represent bit data. As noted in Horimai, column 21, lines 55-65, "the tracking pixel pattern provides the reference position information." The reference position information is digital information that is recorded in a digital pattern, and therefore meets the claim.

Regarding the rejection of claims 4, 5, and 12 (and now 13) under Horimai in view of Suganuma:

Applicant first references the argument with respect to Horimai. This has been discussed above.

Second, Applicant argues that Suganuma "is entirely different from Applicant's invention" because Suganuma is directed toward recording a digital sound track on film, and Applicant's invention is directed toward an interference pattern formed by interference of information light and reference light. The Applicant goes on to say that this means the combination of Horimai in view of Suganuma is not obvious.

In response to applicant's argument that Horimai and Suganuma is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both Horimai and Suganuma are directed toward the two-dimensional recording of digital data. Furthermore, both Horimai and Suganuma read the information from their respective recording mediums with a CCD array or camera.

Finally, note that both Horimai and Suganuma have the same international classification (G11B 7/00), indicating that they are both considered to be part of the same field of endeavor. Thus the combination of Horimai in view of Suganuma would be obvious to one of ordinary skill in the art.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Lamb whose telephone number is (572) 272-5264. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CRL 11/21/06

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